POWER FUNCTION REVIEW

Direct Funding Agreements

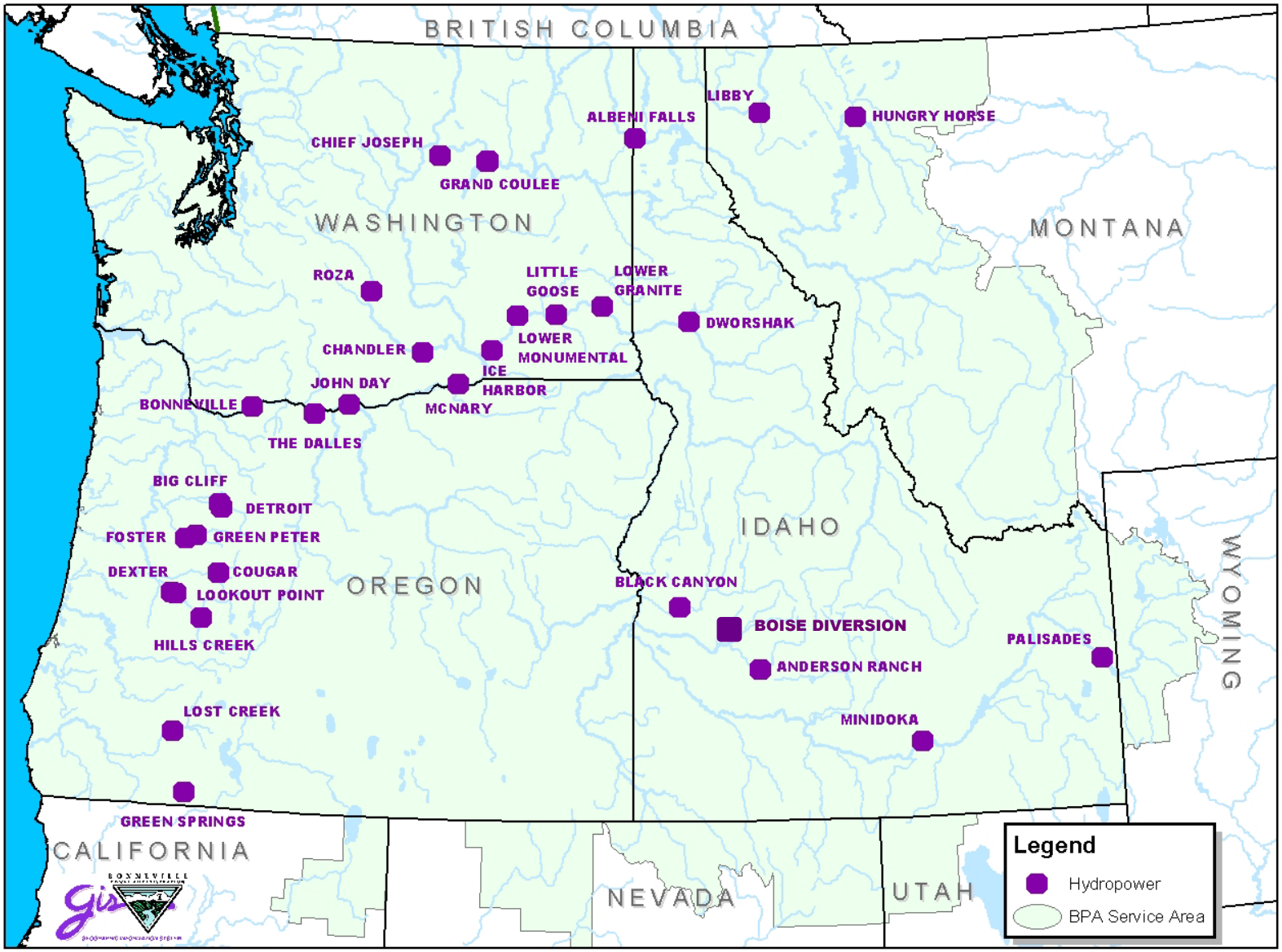
Corps: Fish and Wildlife O&M

Reclamation: Leavenworth Complex

System Summary

- The Federal Columbia River Power System (FCRPS) consists of 31 hydroelectric plants (21 Corps, 10 Reclamation) with 209 turbine-generating units.
- System generating capacity of 22,059 MW; average generation of 78 TWh (or 8,900 aMW).
- The plants have as few as 1 unit and as many as 33 units (GCL).
- The individual generating units ranging in size from 3 MW to 805 MW.
- The oldest units were put into service in 1909; the youngest in 1999.
- Employs about 1,500 employees working on:
  - Hydropower (power-specific and joint).
  - Fish & Wildlife O&M (joint).
  - Cultural Resources (joint).

Federal Columbia River Power System Generation



Program History and Development

- Corps and Reclamation operations and maintenance (O&M) originally funded through appropriations process:
  - Congressional control, funding decline and uncertainty, BPA repays U.S. Treasury.
- Fish Funding MOA (Reimbursable Category Costs.
- Direct funding (1997, 1999): Corps/BOR/BPA determine level of funding:
  - Established Joint Operating Committees.

Funding levels

ACTUAL EXPENDITURES

	1997	1998	1999	2000	2001	2002	2003	2004
Corps Fish and Wildlife O&M	18.9	18.5	19.9	19.7	23.1	28.3	31.4	32.3
Reclamation Leavenworth Hatchery	1.9	1.8	2.5	1.8	3.1	3.8	3.1	3.9
Totals:	**20.8**	**20.3**	**22.4**	**21.5**	**26.2**	**32.1**	**34.5**	**36.2**

FORECASTED BUDGET

	2005	2006	2007	2008	2009	2010	2011	07-'09 Average
Corps Fish and Wildlife O&M	34.3	35.2	37.7	36.9	36.0	36.6	36.4	36.9
Reclamation Leavenworth Hatchery	3.8	3.9	4.2	4.4	4.5	4.7	4.8	4.4
Totals:	**38.1**	**39.1**	**41.9**	**41.3**	**40.5**	**41.3**	**41.2**	**41.2**

Operations and Maintenance Budget for the Fish and Wildlife Program

Portland, Seattle and Walla Walla Districts

Corps F&W Expense Budget

- Funding for O&M tasks in areas affected by the operation of Corps hydropower producing dams:
  - Willamette & Rogue Basins (9/15)
  - Lower Columbia River (4)
  - Snake River Basin(5)
  - Upper Columbia Basin(3)

- We cooperatively rank each task as to its relative importance:
  - Priority 1 = Required by law that are needed every year *
  - Priority 2 = Required by law that are needed irregularly *
  - Priority 3 = Items pending legal requirement
  - Priority 4 = Other Corps Stewardship Program

Corps F&W Expense Budget

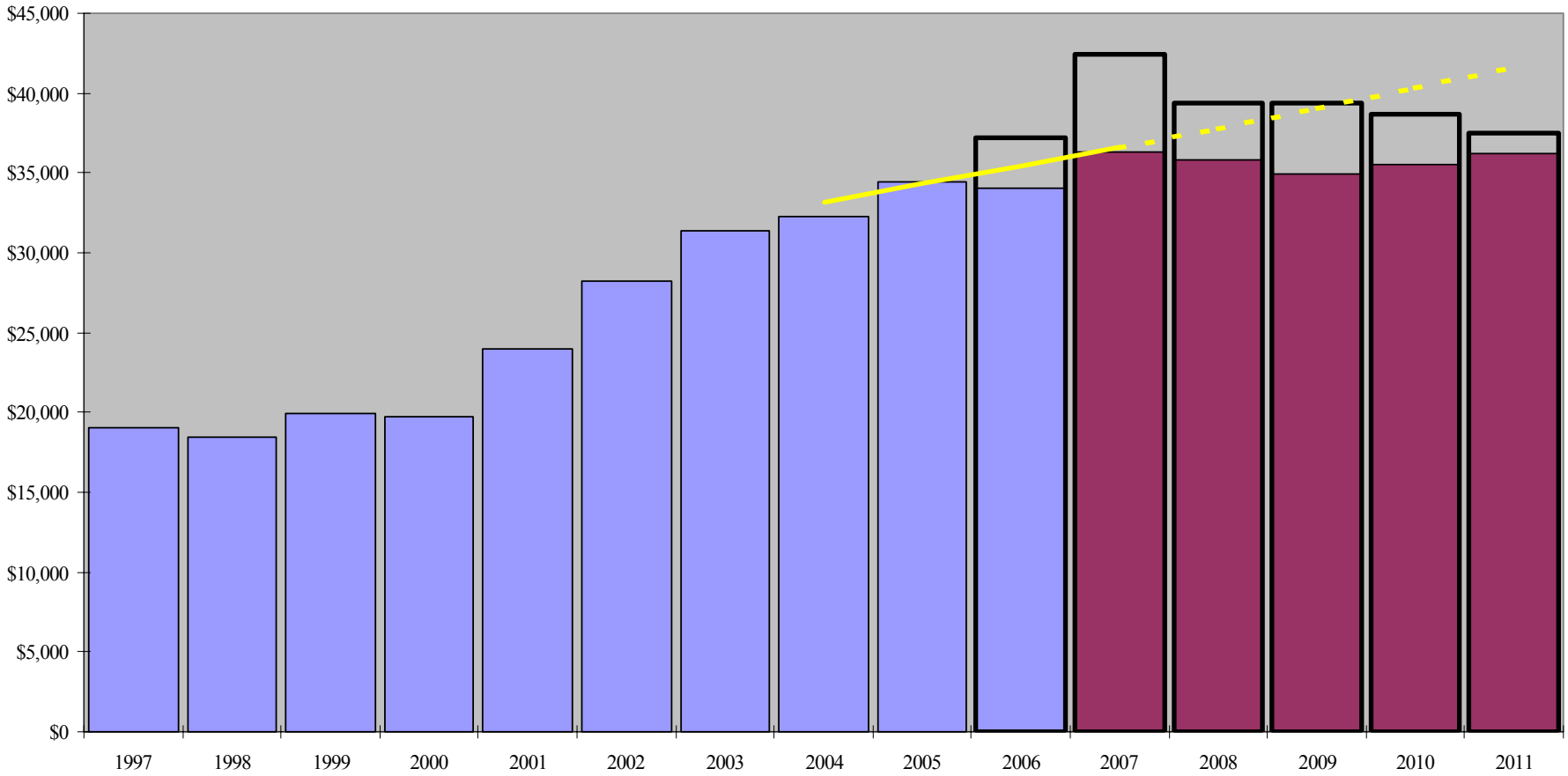
- Anadromous Fish Program (85%)
  - operation/maintenance of fish passage facilities at dams, mitigation hatcheries, smolt transportation, multi-year fish passage research outlined by BiOp, program management.
  - spare parts for fish passage facilities, painting fish barges, coordinating and conducting fish operations, and conducting irregular fish passage or disease research, project management.

- Wildlife and Resident Fish (10%)
  - baseline wildlife management, habitat mitigation, mitigation hatchery maintenance, and invasive species coordination, project management.

- Water Quality (5%)
  - Total Dissolved Gas and Temperature monitoring/modeling, and TMDL coordination, project management.

Corps F&W Expense Budget

US Army Corps of Engineers Expense Fish and Wildlife Budget



Yellow Line indicates a 3% escalation for cost inflation

BONNEVILLE POWER ADMINISTRATION

US Army Corps of Engineers
Northwestern Division

Corps F&W Expense Budget

- What has changed the budget in the past:
  - Biological Opinions for Endangered Species

- What will change the budget in the future:
  - Efficiencies and applying new technologies
  - Revisions to Biological Opinions for Endangered Species
  - Unanticipated events

Operation and Maintenance Budget
Leavenworth Fish Hatchery Complex

Pacific Northwest Region
Bureau of Reclamation

Reclamation Expense Budget
Leavenworth Fish Hatchery Complex

- Mitigation for Permanent Barrier Created by Construction of Grand Coulee Dam.
- Bureau had responsibility to restore, to preconstruction levels of abundance, the salmon resources jeopardized by the construction of Grand Coulee Dam.
- Complex is composed of Leavenworth, Entiat and Winthrop National Fish Hatcheries.
- Following construction, complex transferred to Fish and Wildlife service for operation and maintenance.
- Construction, operation and maintenance expenses to be repaid to the government by the farmers and power users.

Reclamation Expense Budget
Leavenworth Fish Hatchery Complex

- The Leavenworth National Fish Hatchery Complex was authorized by the Grand Coulee Fish Maintenance Project April 3, 1937, and reauthorized by the Mitchell Act (52 Stat. 345) May 11, 1938. The Complex consists of three Mid-Columbia fish hatcheries constructed by the Bureau of Reclamation as fish mitigation facilities for the construction of Grand Coulee Dam ,Columbia Basin Project. Construction of the Entiat, Leavenworth and Winthrop National Fish Hatcheries occurred from 1938-1940. Responsibility for operation and maintenance of the hatcheries was transferred to the USFWS in 1949.

- Today, the USFWS operates the facilities to mitigate for depleted pacific salmon stocks and is funded through a reimbursable agreement with the BOR.

- The Complex budget covers the operations of the three hatcheries as well as a portion of the USFWS Mid-Columbia Fisheries Resource Office and Olympia Fish Health Center. The MCFRO provides monitoring and evaluation of hatchery stocks, marking programs, and permitting compliance for all station programs and activities. The OFHC provides fish diagnostic services in support of healthy salmon stocks.

Reclamation Expense Budget
Leavenworth Fish Hatchery Complex

- Current Complex hatchery operations are authorized by the following treaties, judicial decisions and legislation:

  - Treaty with the Yakama, 06/09/1855
  - Treaty with the Nez Perce, and Tribes of Middle Oregon, 06/25/1855
  - Treaty with the Bands of Colvilles, 04/08/1872
  - U.S. v. Oregon ("Belloni Decision", Case 899), 07/08/1969
  - Endangered Species Act of 1973
  - Pacific Salmon Treaty Act of 1985
  - Salmon and Steelhead Conservation and Enhancement Act, 1980
  - Treaty with the Walla Walla, Cayuse, Umatilla Tribes, 06/09/1855

Reclamation Expense Budget
Leavenworth Fish Hatchery Complex

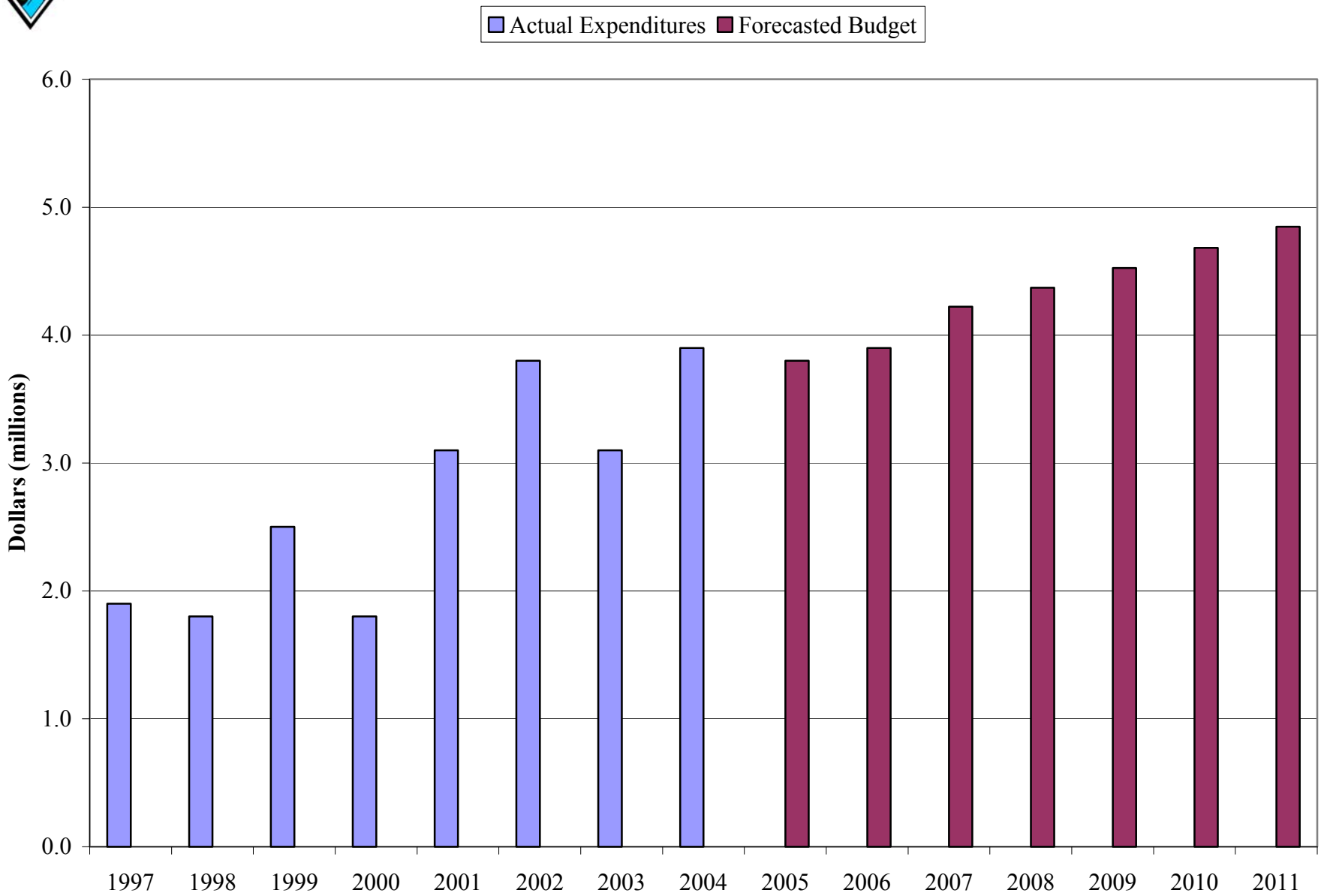
- The Leavenworth Complex Fish production programs support mitigation efforts in the Columbia River Basin. Production goals are set by the Columbia River Fisheries Management Plan under the U.S. v Oregon decision of 1969.

- The Leavenworth NFH currently rears 1.625 Million spring Chinook salmon smolts annually and provides a tribal and sport fishery on Icicle Creek.

- The Entiat NFH rears 400,000 spring Chinook salmon smolts annually for release into the Entiat River.

- The Winthrop NFH rears 600,000 spring Chinook salmon and 100,000 summer steelhead for release in the Methow River.

Reclamation F&W Expense Budget



Reclamation Expense Budget
Leavenworth Fish Hatchery Complex

- Budget Allocation:
  - O&M for Leavenworth, Entiat, and Winthrop Complex: ~ 58%
  - Mid-Columbia FRO Support: ~ 23%
    - Monitoring and evaluation program, tagging, marking programs, permit compliance, Biological Assessments, Hatchery and Genetic Management Plans, ESA compliance, supplies and materials.
    - O&M: ~12%
  - Olympia Fish Health Center Support: ~7%
    - Diagnostic fish health services at Leavenworth, Entiat and Winthrop NFH's Monthly fish health inspection throughout the entire rearing cycle of the salmon (egg to adult), diagnostic work, supplies, and materials.

Direct Funding Agreements
Corps: Fish and Wildlife O&M
Reclamation: Leavenworth Hatchery

QUESTIONS

POWER FUNCTION REVIEW

Corps of Engineers and Bureau of Reclamation Fish Related Capital Investments

BONNEVILLE POWER ADMINISTRATION

US Army Corps of Engineers
Northwestern Division

Columbia River Fish Mitigation Project (CRFM)

BONNEVILLE POWER ADMINISTRATION

US Army Corps of Engineers
Northwestern Division

Columbia River
Fish Mitigation Project

- Purpose: Improve fish survival though the "passage" dams on the Columbia/Snake Rivers.
- Initiated in 1991.
- Funded through annual Congressional appropriations.
- BPA repays Treasury for "power share" of costs
  - Payments begin when new facility goes into operation
  - Amortized payments

Columbia River
Fish Mitigation Project

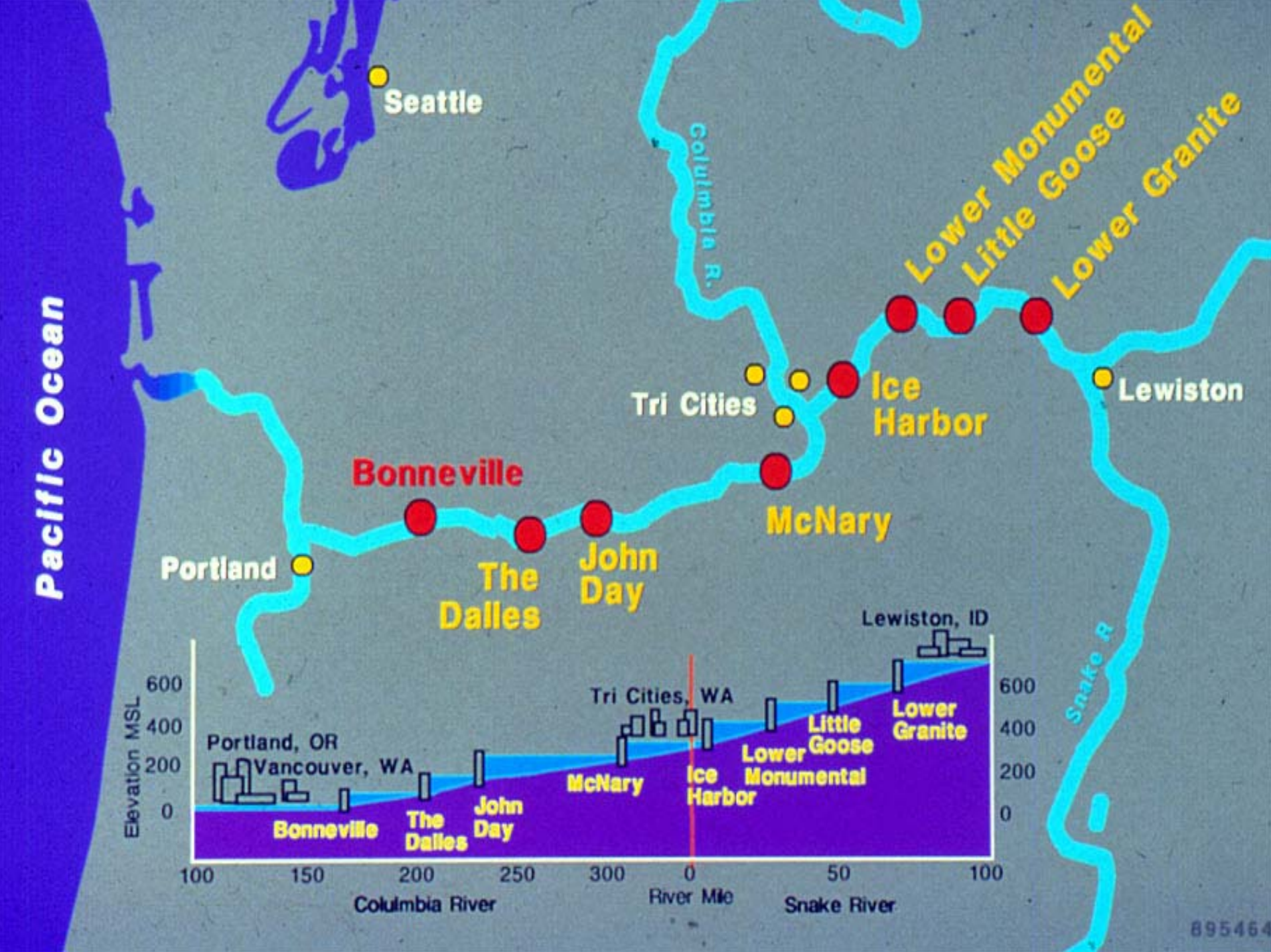
US Army Corps of Engineers
Northwestern Division

Annual Expenditures

1997	$85.2M
1998	$98.3
1999	$78.6
2000	$70.4
2001	$84.5
2002	$73.2
2003	$82.3
2004	$65.9

Transfers to Plant-in-Service
(power share)

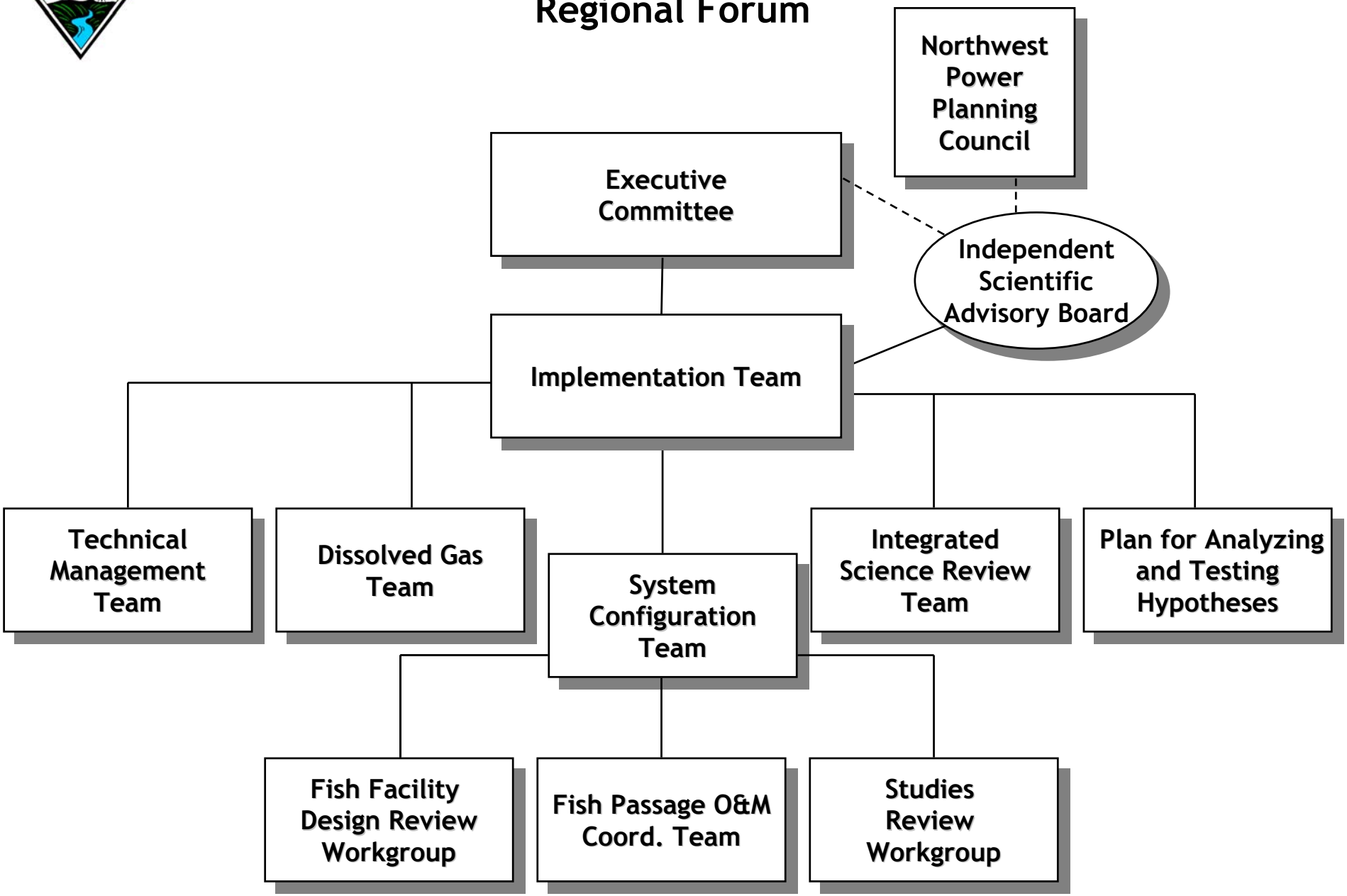
1997	$
1998	$
1999	$14.1M
2000	$47.0
2001	$6.2
2002	$8.8
2003	$68.4
2004	$62.9


Pacific Ocean
Seattle
Columbia R.
Lower Monumental
Little Goose
Lower Granite
Tri Cities
Ice Harbor
Lewiston
Bonneville
McNary
Portland
The Dalles
John Day
Snake R.
Lewiston, ID
Tri Cities, WA
Portland, OR
Vancouver, WA
Bonneville
The Dalles
John Day
McNary
Ice Harbor
Lower Monumental
Little Goose
Lower Granite
Elevation MSL
600
400
200
0
100
150
200
250
300
0
50
100
Columbia River
River Mile
Snake River
895464

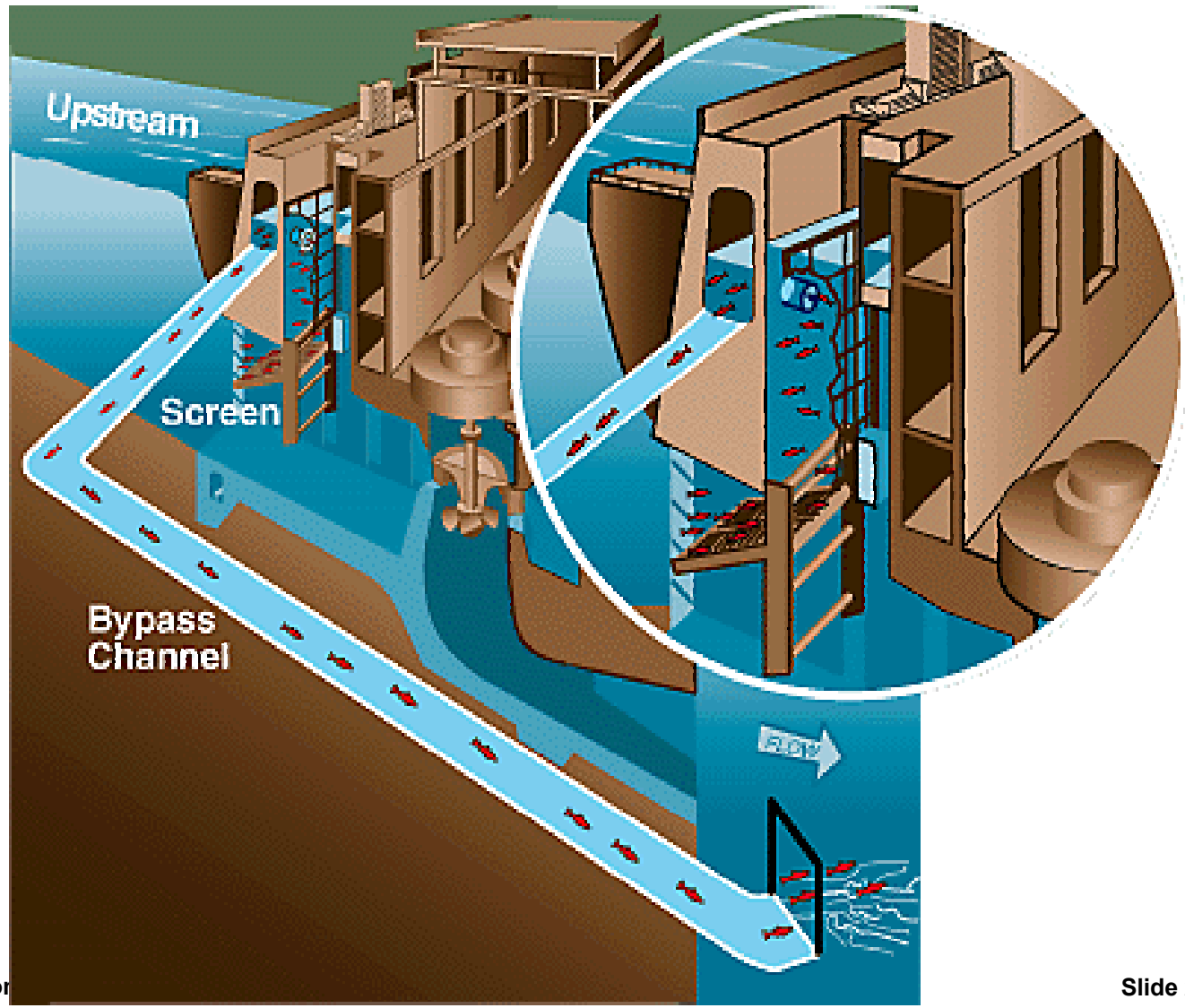
Columbia River
Fish Mitigation Project

- Primary focus - passage facility configuration and operations at the dams:
  - Evaluate project and system fish passage & survival.
  - Identify/develop/construct passage improvements.
  - Seek cost effective alternatives.
  - Implement Biological Opinions.
  - Regional coordination.

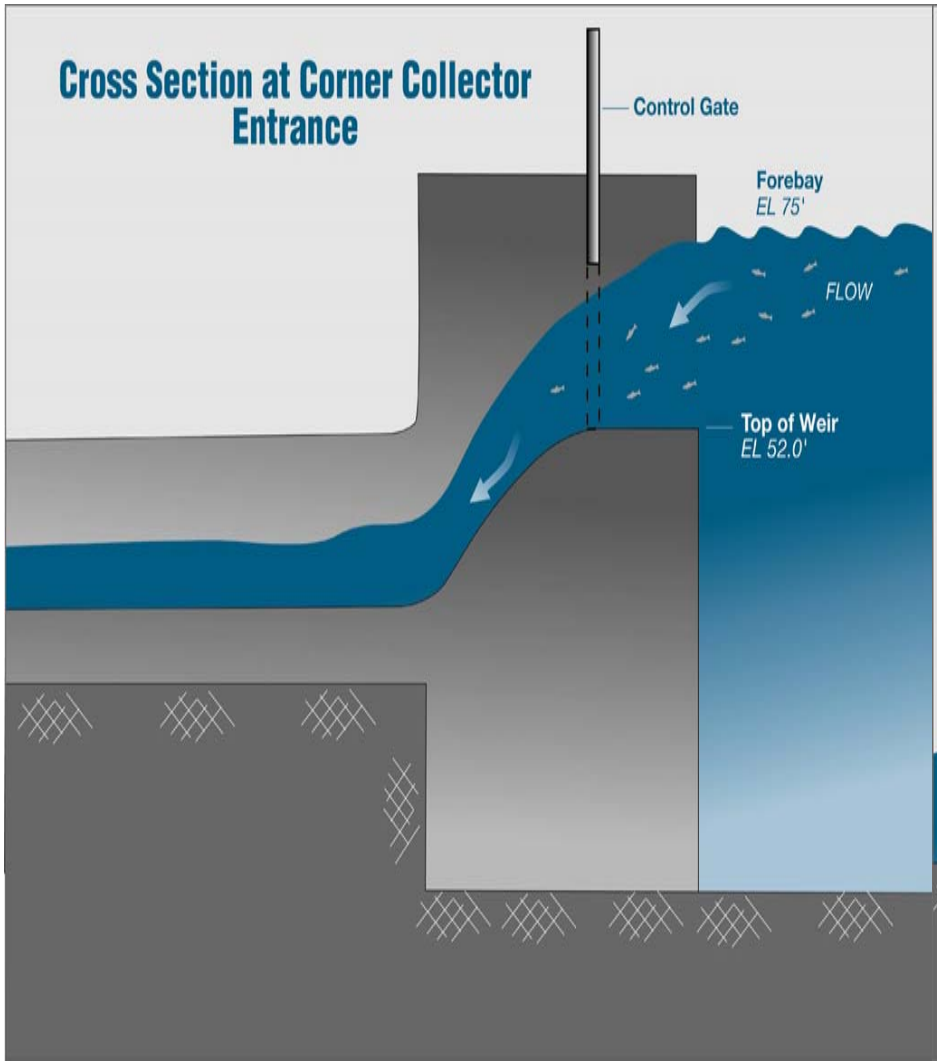
Regional Forum

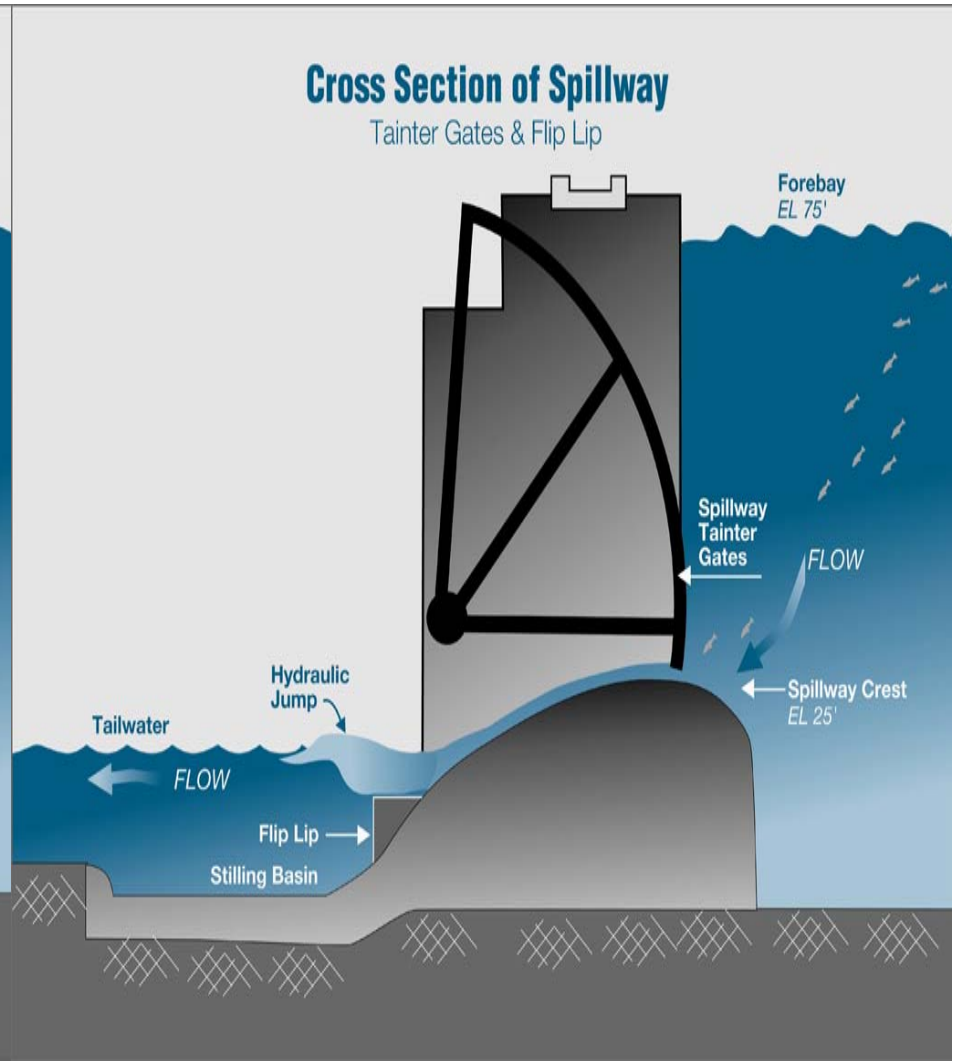


Screened Bypass System



Surface Bypass vs. Spillway Bypass

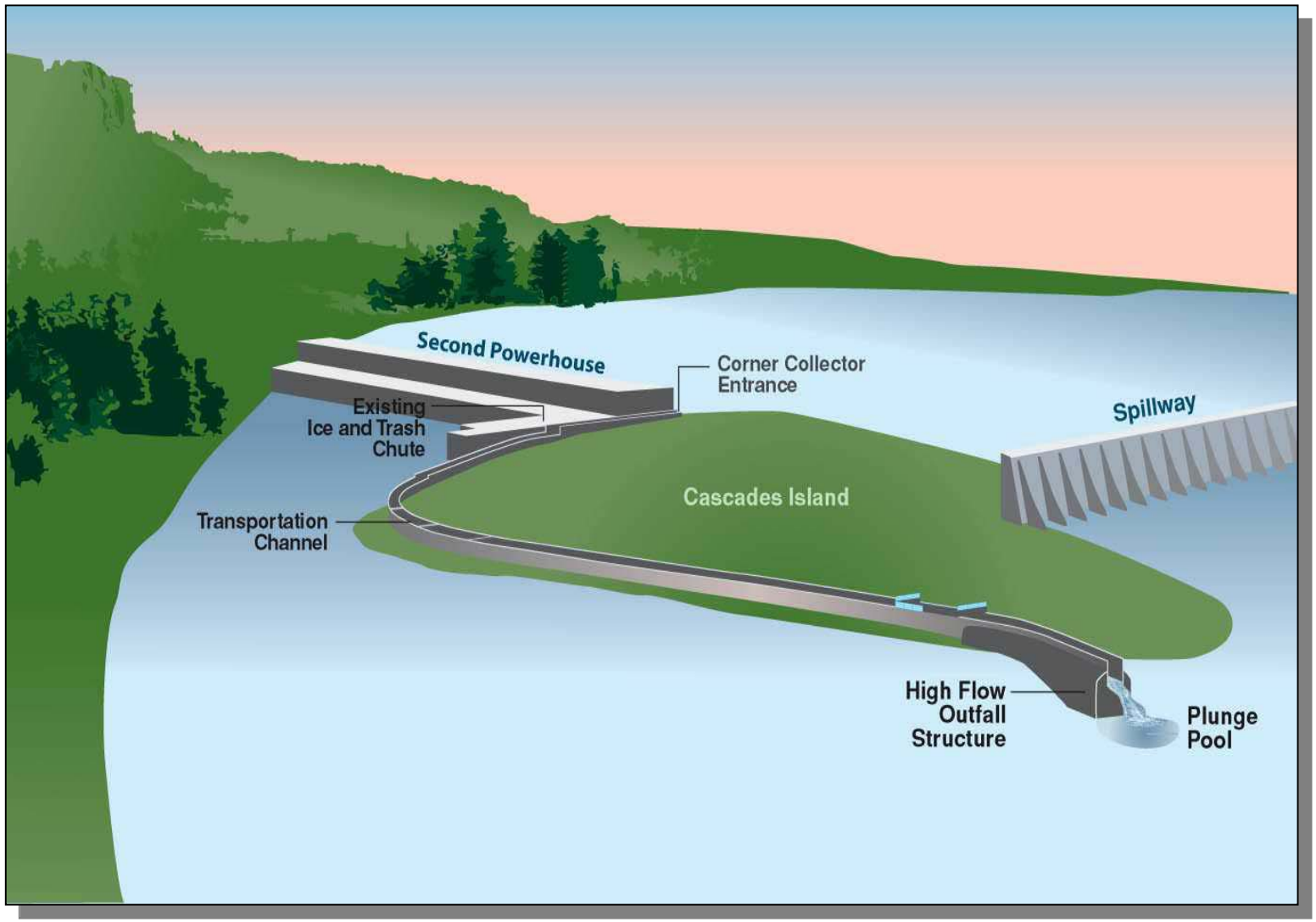




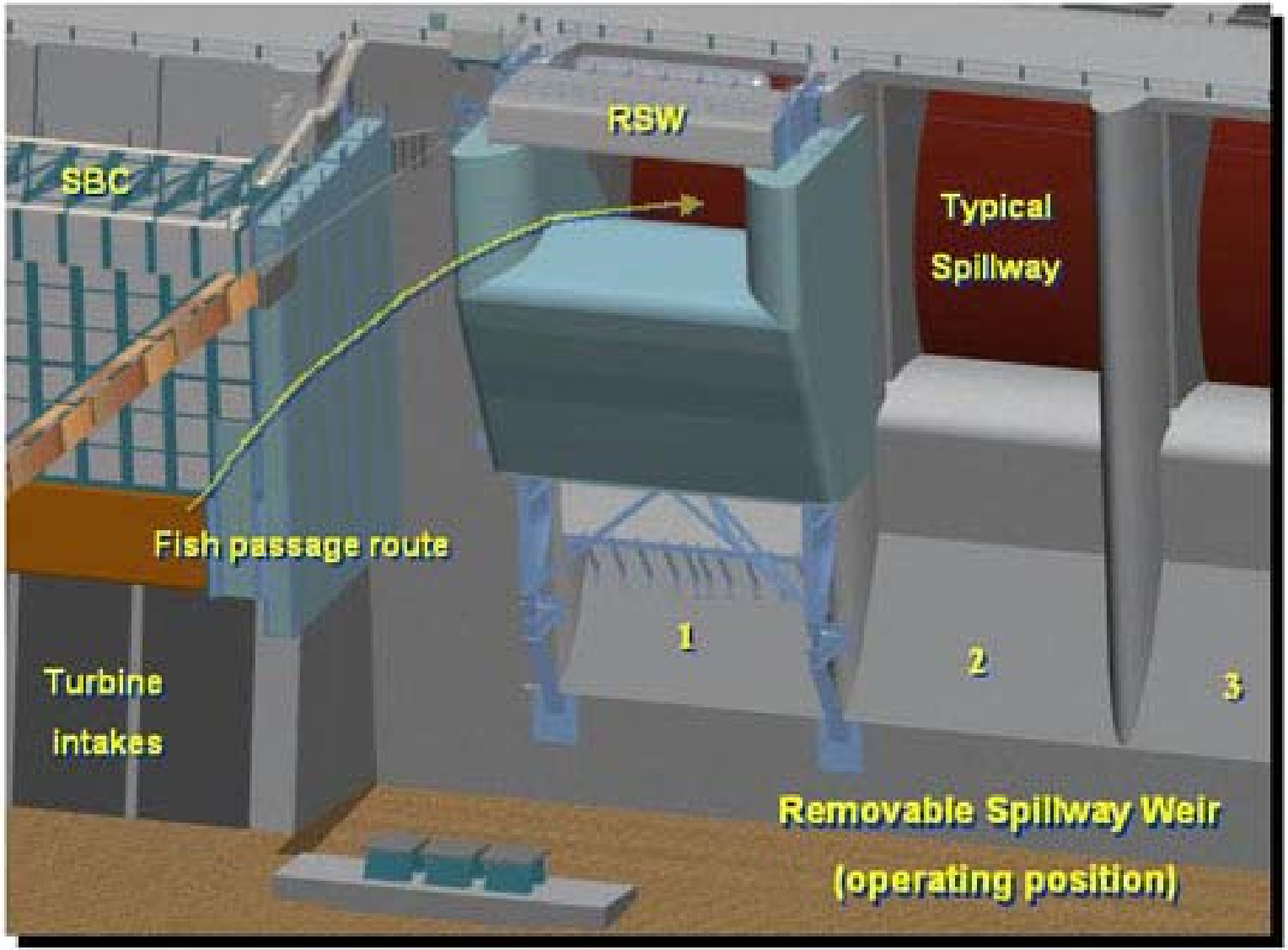
BONNEVILLE POWER ADMINISTRATION

US Army Corps of Engineers
Northwestern Division

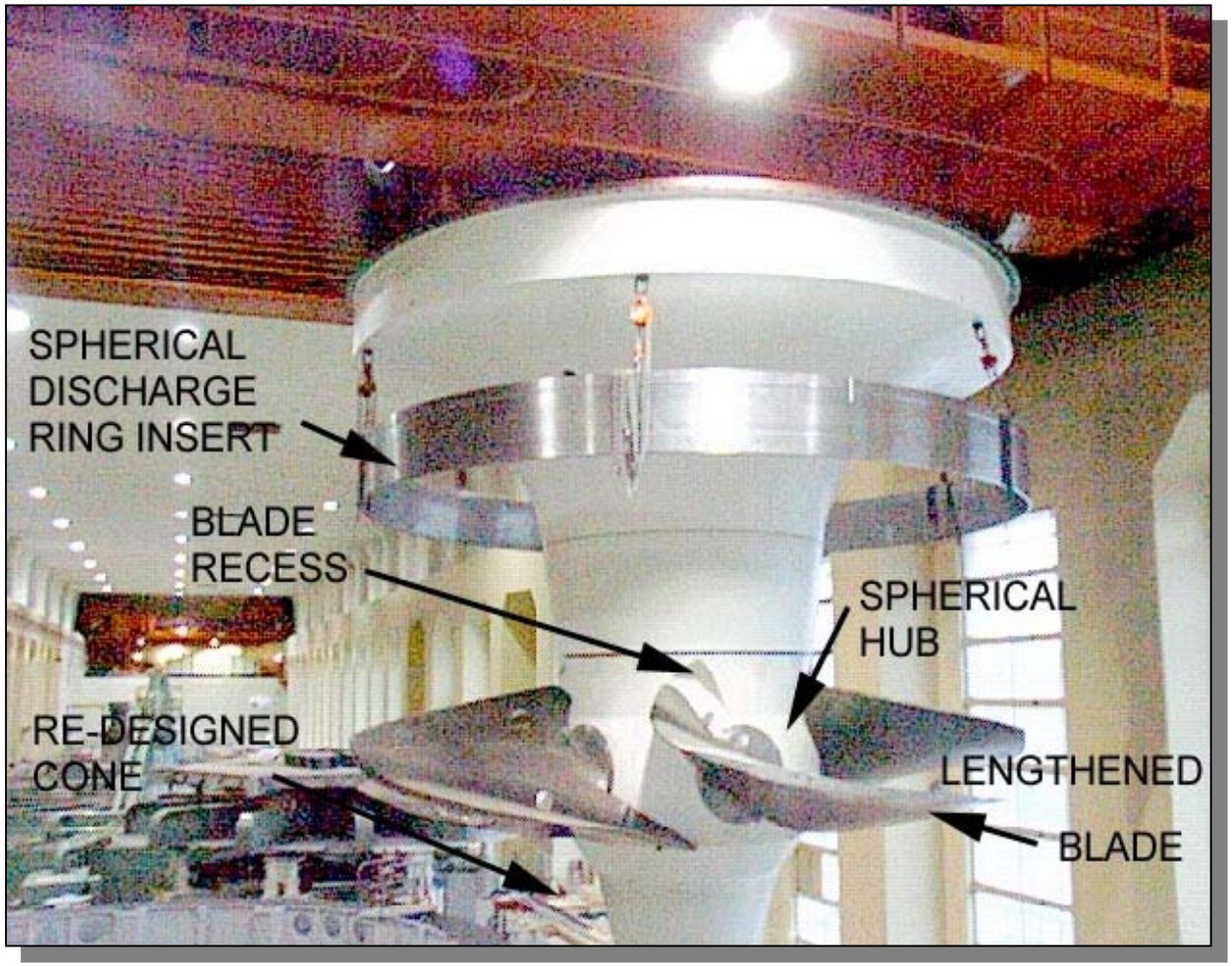
Bonneville 2ndPH Corner Collector



Removable Spillway Weir



Bonneville 1st PH Minimum Gap Runner



Columbia River
Fish Mitigation Project

- Costs:
  - Thru FY 2004 (expended)- ***$ 930 million***
  - FY 2005 (appropriated) - ***$ 75***
  - FY 2006 (request) - ***TBD***
  - Annual estimates (2007-2014)- ***$70-90M /year***
  - Estimated total project cost - ***$ 1,550 to 1,650 million***
- Schedule:
  - Complete by 2014 (to meet Biological Opinion goals)
  - Additional work to ????

Corps F&W Large Capital (not CRFM)

- Aging equipment will require significant capital investment in the future
  - E.g. pumps, fish ladders, turbine intake screens, etc…

Columbia Basin Project (Grand Coulee)
Fish Related Capital

Leavenworth Fish Hatchery Complex
Capital Program

- $6 million in FY 2004 and FY 2005 for rehabilitation of Water Deliver System (current system in non-compliance with ESA. NFMS has alerted Service of possible injunction against continued use of existing system).

- Requested $10 million for NADA and Snow Dams Rehab starting in FY 2007.

Corps of Engineers and Bureau of Reclamation Fish Related Capital Investments

QUESTIONS